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ABSTRACT

A study evaluated the effectiveness of the Success in Beginning Reading and Writing (SBRW) program which is based on the philosophy that children should be taught to read and write using materials they will rely on later in life. Subjects, 59 students involved in the SBRW program, were given the California Achievement Tests as pre- and posttests. Pretests indicated that the pilot students scored below national norms in all subtest areas. Posttest results indicated that pupils in the SBRW program fell behind the growth rate of students taking the CAT in all four subtest areas (reading vocabulary, reading comprehension, reading total, and language expression). Scores on the reading vocabulary and reading total posttests actually declined for students in the SBRW program. (RS)

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EVALUATION REPORT

ED298458

EVALUATION OF THE FIRST GRADE PILOT OF SUCCESS IN BEGINNING READING AND WRITING PART II—1987-1988

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CS009310

EVALUATION OF THE FIRST GRADE PILOT OF SUCCESS IN BEGINNING READING AND WRITING PART II—1987-1988

An Approved Report of the

DIVISION OF ADMINISTRATION AND PERSONNEL

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July, 1988

CS007310

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INTRODUCTION

The School District of the City of Saginaw first used the "Success in Beginning Reading and Writing" (SBRW) materials during the 1986-87 school year in fifteen Junior First classrooms. Based on that experience, these materials and their associated techniques were piloted in four first grade classrooms at three different buildings. This report is based upon the first grade pilot and comparison classrooms at the same three buildings that used basal readers and workbooks. Up to this point, the basal reader and its workbook were the district-wide adopted approach for the instruction of reading and writing. This pilot, if successful, could lead to a major change in the district's reading and writing curriculum.

Because many of the activities found in workbooks may be of dubious value in teaching reading, the SBRW program allocates 90 percent of the child's reading time to actually reading and writing. The SBRW program is one of the few eclectic approaches to teaching reading. The program itself stems from the belief of Duke University researchers that children should be taught to read and write using materials they will rely on later in life. Reading and writing complement each other in the program and children have the chance to do both during a daily two hour period. The SBRW program depends heavily on the children's use of language and the building of a good experiential background before any reading or writing instruction ever begins.

The SBRW program developers claim their program is rewarding for students, teachers, and administrators. By the end of the program, pupils have been exposed to a wide variety of printed material and have composed many types of written communication. Most important, these young learners have

been given the opportunity to feel good about themselves because they have been successful.

Teachers as well find the SBRW a strong program according to the program proponents. It takes advantage of their expertise and ingenuity by asking them to develop a brief outline into a challenging and rewarding experience for the pupils.

Again according to program developers, administrators can see the SBRW as cost effective. No ditto masters, workbooks, basal readers, or vocabulary charts are required since materials used in the program are readily available. Subscriptions to several magazines and the daily newspaper and a well-stocked library constitute the supplies needed. Thus monies once spent on kits and materials can be used more effectively in other areas.

Overall, the SBRW program according to program literature has eight distinctive characteristics. They include the following:

1. There is no predetermined sequence of skills, although skills are emphasized in all modules. The timing for teaching certain skills is often generated within the moment--to extend pupils' social, psychological, and mental perspective at the optimal point in the learning process.

2. Sight words are not taught from isolated lists, but as they appear in a sentence or paragraph and in a meaningful context.

3. Verbal communication plays an important role in children's understanding. Word meanings are taught as they are volunteered by students in their own phrases or sentences.

4. Students' vocabulary is displayed on a chart, a key element of the SBRW program and an identifiable feature of these classrooms.

5. Students begin with words they already know and proceed to learn words volunteered by others in the classroom or found somewhere in print. This freedom to learn to read and write an unlimited and uncontrolled vocabulary is another feature of the program.

6. Students get off to a successful start because they are not afraid of failure.

7. Small groups are formed from time to time, but never on the basis of ability levels, and are maintained only until predetermined objectives are realized.

8. Students' positive self-concepts develop from successful endeavors in reading and writing.

The evaluation of SBRW pilot at the first grade level will involve two parts. Part 1 deals with self report data from pupils, teachers, and principals concerning the SBRW pilot contrasted with the workbook approach. Part 2, the subject of this report, will deal with a pre- to post-test [California Achievement Tests (CAT)--Form E] comparison of the SBRW program to the Holt Basic Reading (HBR) program and the Spring, 1985 national norming group of the CAT.

What follows are the specifics of the Part 2 evaluation into the effectiveness of the SBRW treatment as contrasted with the HBR program and the CAT national norming group.

EVALUATION PROCEDURES

In conducting an evaluation of an educational program, information is sought concerning the process and the quality of outcomes of that educational program. The processes and outcomes can be compared either to predetermined standards or competing educational programs.

This evaluation of SBRW uses the Spring, 1985 CAT national norming group at kindergarten and first grade as the standard. Initially it was planned to use the Holt Basic Reading Program (HBR) as the competing educational program or standard. An analysis of kindergarten test scores in vocabulary, reading comprehension, reading total, and language expression on the California Achievement Tests (CAT) Form E revealed no statistically significant differences (alpha = .05) in the test scores existed between SBRW (pilot) and HBR (control) pupils at the onset (see Appendix A for further details of the analysis). A gap reduction evaluation design was chosen and upon further analysis of the results it was found that the HBR group was inappropriate as a control because of its poor performance. This poor performance was graphed using the gap reduction evaluation design (see Appendix A for these figures). The poor performance of the HBR control is evident from the graphs. The CAT national norming group (NNG) at the kindergarten and first grade levels shows a continuing upward growth that would be expected of a realistic control or comparison group.

The pre- to post-test results on the CAT in vocabulary, reading comprehension, reading total, and language expression served as the educational outcomes of interest. Treatment students were pre-tested in April/May, 1988. Pupils lacking a post-test score (six treatment pupils) were given a post-test score by adding the average post-test gain to their initial pre-test score as recommended by Tallmadge, G., et al. (1987).

The predetermined standard chosen to compare the two groups was the Relative Growth Index (RGI). This index indicates the percentage increase or decrease of the treatment group (SBRW) as compared to the comparison group (NNG) between the mean pre- and post-test achievement levels. Thus the index allows us to make inferences about program effectiveness that are limited to relative rather than absolute impacts. It is expected that the gap will stay the same or be reduced as a result of the SBRW program participation. Figure 1 below illustrates the reduced gap expected between treatment (T) and comparison (C) groups.

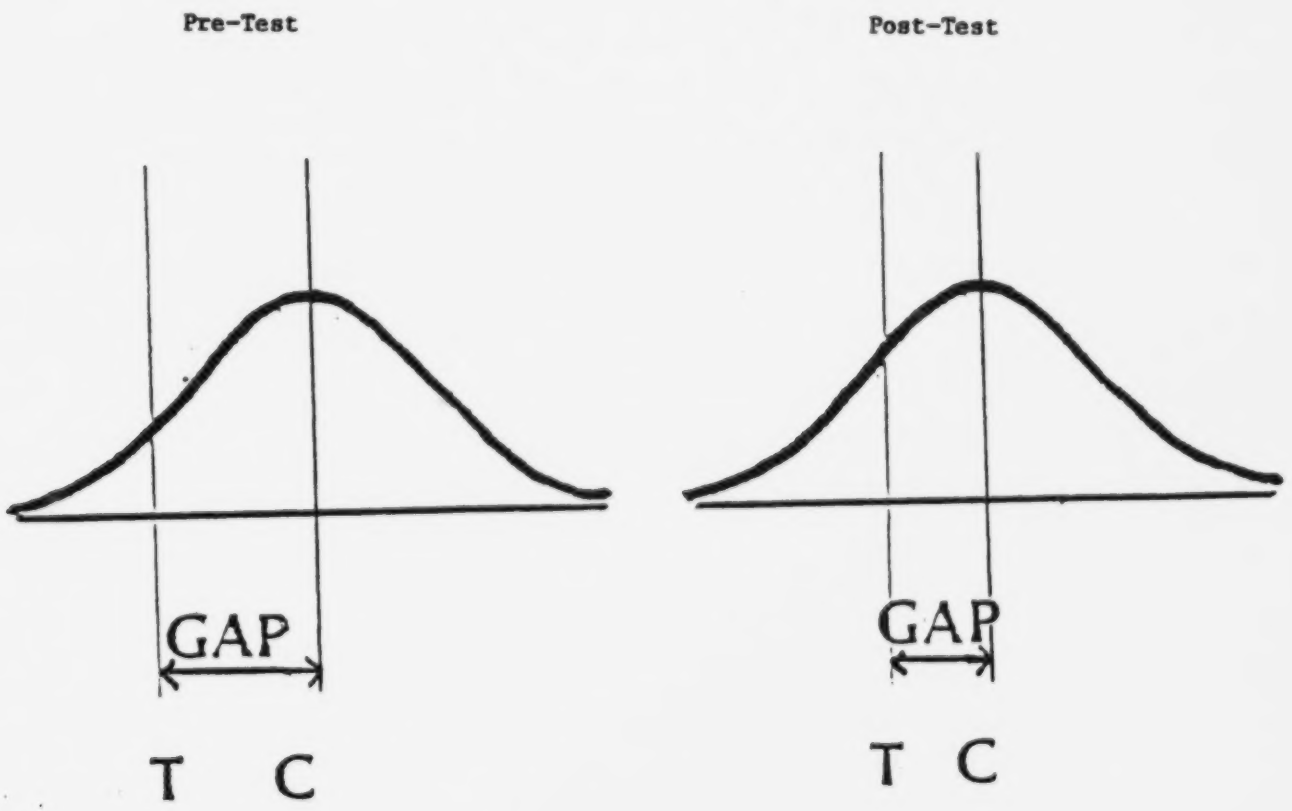


Figure 1. Gap Reduction Design.

To calculate the Relative Growth Index (RGI), the comparison group's pre- and post-test standard deviations are pooled. This pooled standard deviation is the metric in which growth estimates for the pilot and comparison groups are cast. Finally, the growth of the pilot group is expressed as a percentage of the growth of the comparison group, thus providing an easy-to-interpret Relative Growth Index (RGI). (See Appendix B for the steps involved in the calculation of this index.) RGI's less than 100% indicate that the SBRW pupils fell further behind the NNG during this school year. RGI's equal to 100% indicate that the pilot group grew at the same rate as NNG comparison students, and RGI's greater than 100% indicate that SBRW participants out gained the NNG participants. A negative RGI means that one group grew while the other group lost.

The study's alternate hypotheses are stated below.

1. There will be a Relative Growth Index (RGI) of 100% or greater in reading vocabulary as measured by CAT for SBRW participants.

2. There will be a Relative Growth Index (RGI) of 100% or greater in reading comprehension as measured by CAT for SBRW participants.

3. There will be a Relative Growth Index (RGI) of 100% or greater in reading total as measured by CAT for SBRW participants.

4. There will be a Relative Growth Index (RGI) of 100% or greater in language expression as measured by CAT for SBRW participants.

The null hypothesis in each case above is that there will be a Relative Growth Index (RGI) less than 100% in each subtest of the CAT for SBRW participants regardless of sign.

PRESENTATION OF DATA

The criterion chosen to determine the success of the SBRW program was the Relative Growth Index (RGI). The RGI is the statistic used in the gap reduction evaluation model design. The research question posed is "Whether the SBRW pilot group is keeping up with or surpassing the NNG comparison group." The gap measured is the gap between the mean achievement level of the SBRW group and the mean achievement level of the NNG comparison group. It is hypothesized that the gap between the pilot and comparison groups will remain the same or be reduced between pre- and post-testing. A total of 59 SBRW and approximately 20,000 NNG pupils results entered into the calculation of RGI statistics (see Appendix C for the summary statistics used to calculate the RGIs).

To evaluate this hypothesis the NNG comparison group's pre- and post-test standard deviations are pooled. This pooled standard deviation is then used as the metric in which growth estimates for the pilot and comparison group are measured. Finally, the growth of the pilot group is expressed as a percentage of the growth of the comparison group, thus providing an easy-to-interpret RGI (see Appendix B for the exact steps to calculate the Relative Growth Index).

The interpretation of the RGI deserves a bit of an explanation. A RGI less than 100% indicates the SBRW pilot group is falling behind the comparison group. When the RGI equals 100% it signifies the pilot group is keeping equal to the NNG comparison group. A RGI greater than 100% means the pilot group is catching up to the comparison group. Figure 2 puts this interpretation in graphic form relative to the gap between the pilot and comparison group.

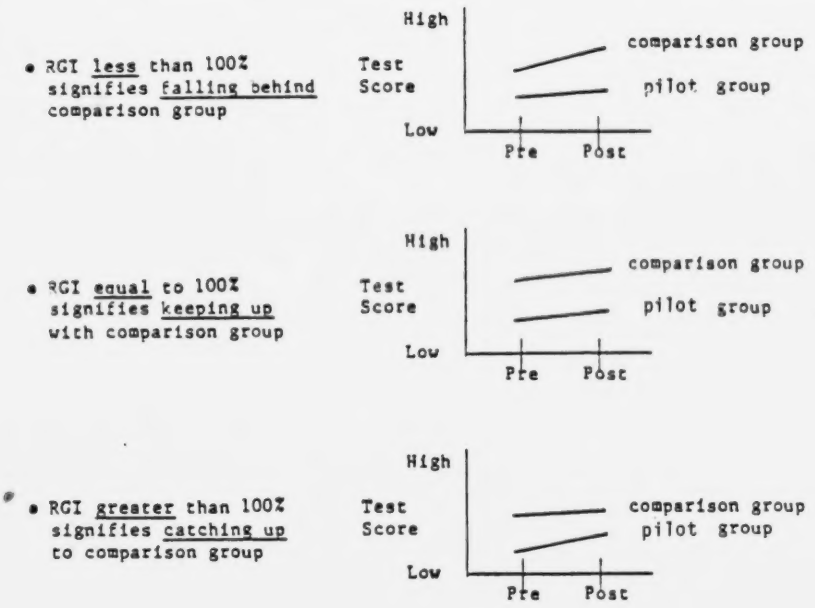


Figure 2. Interpretation of Relative Growth Indices (RGIs).

Table 1 below presents the RGIs by hypothesis and subtest.

TABLE 1. RELATIVE GROWTH INDEX (RGI) BY HYPOTHESIS AND SUBTEST AREA.

Hypothesis/Subtest Number / Area	Relative Growth Index
1. Reading Vocabulary	-37.03%
2. Reading Comprehension	69.14%
3. Reading Total	-22.78%
4. Language Expression	6.29%

A review of Table 1 reveals that the SBRW (pilot group) fell behind the NNG (comparison group) on all four subtests. The SBRW group failed to close the gap between the comparison group in any of the four comparisons Appendix C presents a graph of each of the comparisons.

In the areas of reading comprehension and language expression, the SBRW group grew (RGI = 69.14% and 6.29% respectively) but not as fast as the comparison group. Thus the gap increased but the SBRW experienced growth. A much worse situation was evident in reading total and reading vocabulary with the SBRW group losing (RGI = -22.78% and -37.03% respectively) as the comparison group continued to experience progress. See Appendix C for a graph by subtest area for SBRW pilot versus the comparison NNG using relative growth statistics.

The following chart specifies the hypotheses relating to the RGI's and their status relative to the research question.

Hypothesis #	Subtest Area	Results Which Equal or Exceed Gains Hypothesized
1	Reading Vocabulary	No
2	Reading Comprehension	No
3	Reading Total	No
4	Language Expression	No

As indicated above the SBRW pilot group failed to equal the growth of the NNG group in any of the subtest areas. Thus the SBRW program appears to be less successful generally than other programs nationally in bringing about achievement gains on the CAT on the four subtests reviewed.

SUMMARY

The School District of the City of Saginaw is completing a pilot of a new reading and writing program in first grade. The new program entitled, "Success in Beginning Reading and Writing" (SBRW) is based on the philosophy that children should be taught to read and write using materials they will rely on later in life. SBRW is thus philosophically different than a basal reader and workbook as presently employed nationally in most school districts.

This report has contrasted the SBRW and the CAT national norming group (NNG) through the use of the Relative Growth Index (RGI). This index indicates the percentage the pilot group (SBRW) is falling behind or catching up to the comparison group (NNG) in terms of mean pre- and post-test achievement levels. The SBRW program showed itself to be an inferior program in terms of fostering growth from pre- to post-testing in all four CAT subtest areas--language expression, reading total, reading vocabulary, and reading comprehension--than the NNG comparison group. The increased gap (or the RGI less than 100%) for the SBRW pilot group were 69.14%, 6.29%, -22.78%, and -37.03% for reading comprehension, language expression, reading total, and reading vocabulary, respectively.

Overall, it was found that the SBRW pilot failed to reduce the academic achievement gap between the California Achievement Test (CAT) national norming group in the general areas of reading and language expression.

What follows is a series of recommendations relative to the SBRW program.

RECOMMENDATIONS

Listed below are a series of recommendations based on the findings from both this report (Part 2) and its companion report (Part 1) finished earlier. These recommendations are offered in an effort to improve the implementation and study the impact of SBRW in the future.

1. From a review of the process findings presented in the Part 1 report and the outcome findings presented in the Part 2 report, it appears the SBRW pilot might be continued. Before making this decision, additional research should be done into evaluation findings of the program developers to determine whether what looks as a questionable pilot should be continued and how it might be further enhanced to make it worth to be continued.

2. If the pilot does continue, definite plans for any future or continuing study of the SBRW program should be outlined in advance. Such advanced planning would yield more comprehensive accounting of all participants that hampered this study.

APPENDICES

APPENDIX A

TO: Miriam Sweigart

FROM: Richard Claus
Raul Rio

RE: An Analysis of the Equivalency of Pilot and Control Sites: Success in Reading and Writing

DATE: December 21, 1987

We have just completed a preliminary analysis of the data you provided regarding the Success in Reading and Writing Project. The major findings and recommendations are presented below.

Major Findings:

- As indicated on the following page, a total of 208 pupils are participating in the control and pilot classrooms.

- Of these students, 89 pupils are receiving the Project treatment (pilot), and 119 pupils are not (control).

- California Achievement Tests (CAT) data are available on a total of 139 children. Of these tested, eighty of the 119 (67.2%) pupils are not receiving the pilot treatment, and 59 of the 89 (66.3%) pupils are receiving the treatment.

- Data by gender and racial/ethnic classifications were also tabulated and are presented on the following page.

- For those students on whom CAT data were available, no statistically significant differences in the test scores exist between those students receiving the treatment and those students who are not.

Recommendations:

In order to insure that differences can be detected at the conclusion of this Project, the following recommendations are offered:

- Project activities as well as objectives and expected outcomes must be described in detail. These Project activities must be standardized across buildings, teachers and groups.
- Monitoring of Project activities should be conducted.
- Every effort must be made to test both pilot and control pupils in the Spring of 1988.

We will be looking forward to assessing the outcome of this Project. We will also be willing to assist you on a time available basis. If you have any questions, please contact us.

cc: William Cheaney
Barry E. Quimper

APPENDIX A

TOTAL NUMBER OF STUDENTS BY PARTICIPATION STATUS AND BUILDING

Participation Status	Building	Count
Control	Emerson	52
Control	Heavenrich	23
Control	Herig	44
Subtotal		119
Pilot	Emerson	24
Pilot	Heavenrich	45
Pilot	Herig	20
Subtotal		89
TOTAL		208

NUMBER OF STUDENTS WITH TEST SCORES BY PARTICIPATION STATUS AND BUILDING

Participation Status	Building	Count
Control	Emerson	31
Control	Heavenrich	9
Control	Herig	40
Subtotal		80
Pilot	Emerson	13
Pilot	Heavenrich	29
Pilot	Herig	17
Subtotal		59
TOTAL		139

APPENDIX A

NUMBER OF STUDENTS WITH TEST SCORES BY GENDER

Gender	Participation Status	Count
Females	Control	38
Females	Pilot	25
Subtotal		63
Males	Control	42
Males	Pilot	34
Subtotal		76
TOTAL		139

NUMBER OF STUDENTS WITH TEST SCORES BY ETHNIC GROUP

Racial/Ethnic Group	Participation Status	Count
Caucasion	Control	38
Caucasion	Pilot	13
Subtotal		51
Hispanic	Control	3
Hispanic	Pilot	9
Subtotal		12
Black	Control	39
Black	Pilot	37
Subtotal		76
TOTAL		139

FIGURE A.1. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING VOCABULARY.

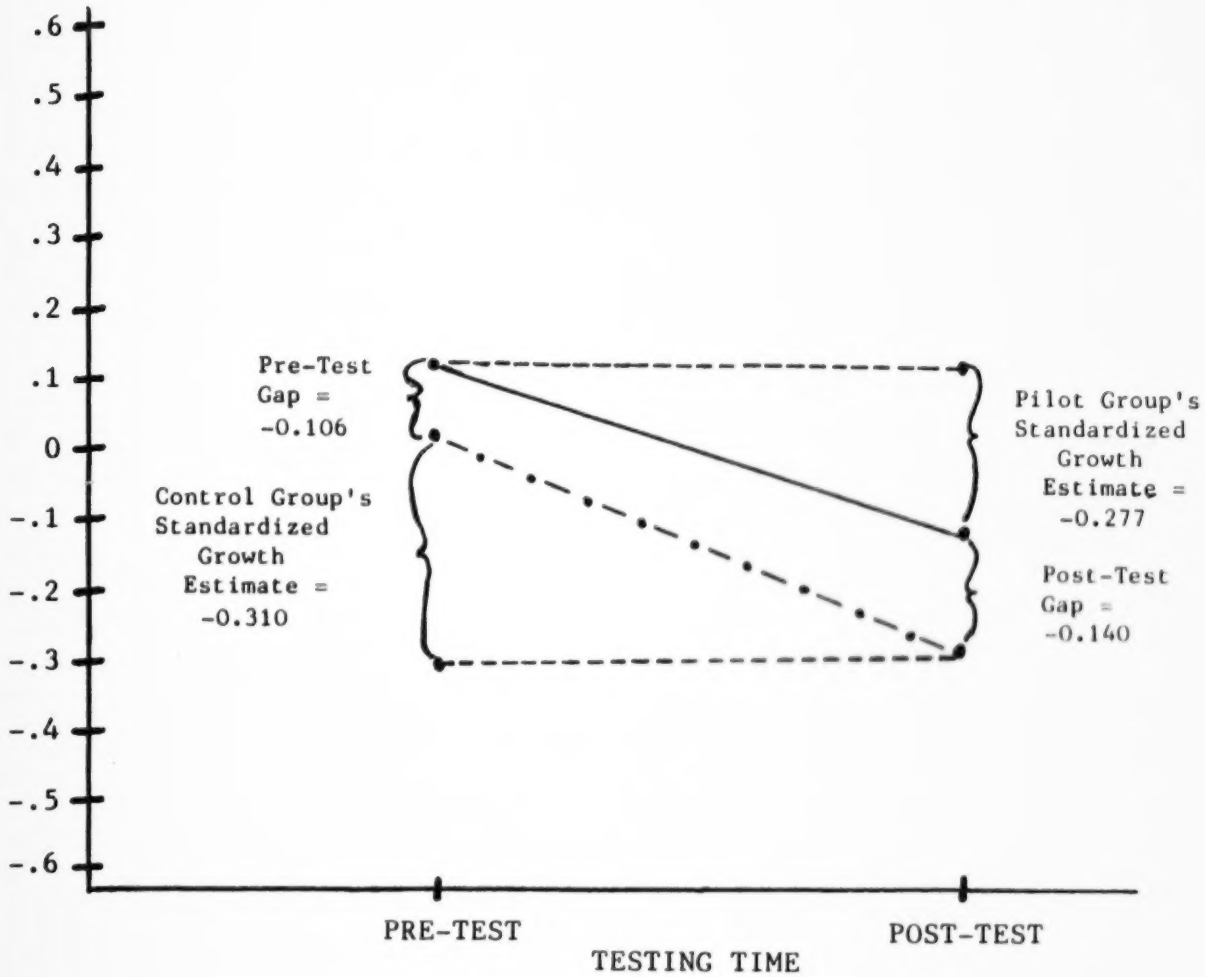


FIGURE A.2. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING COMPREHENSION.

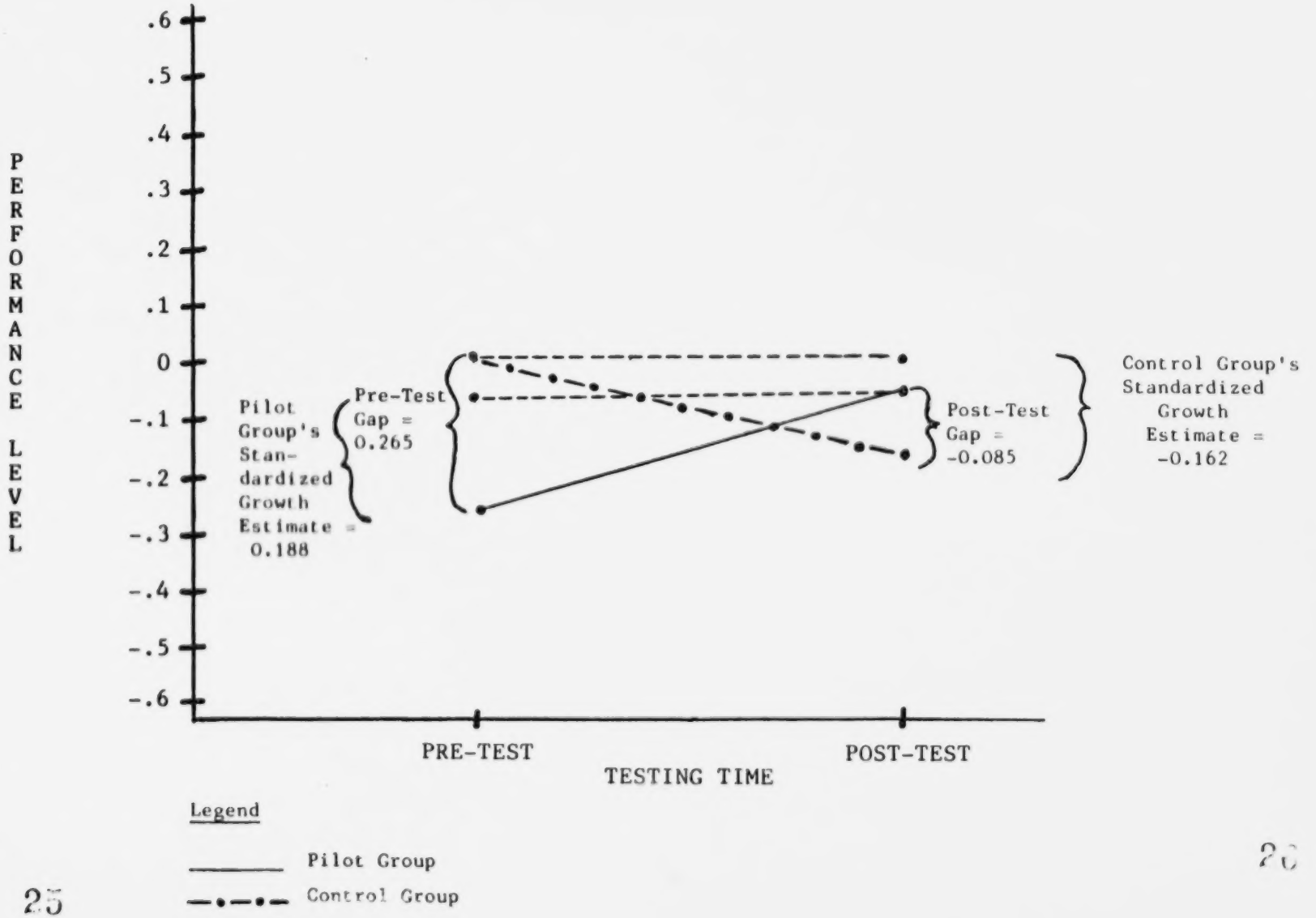


FIGURE A.3. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING TOTAL.

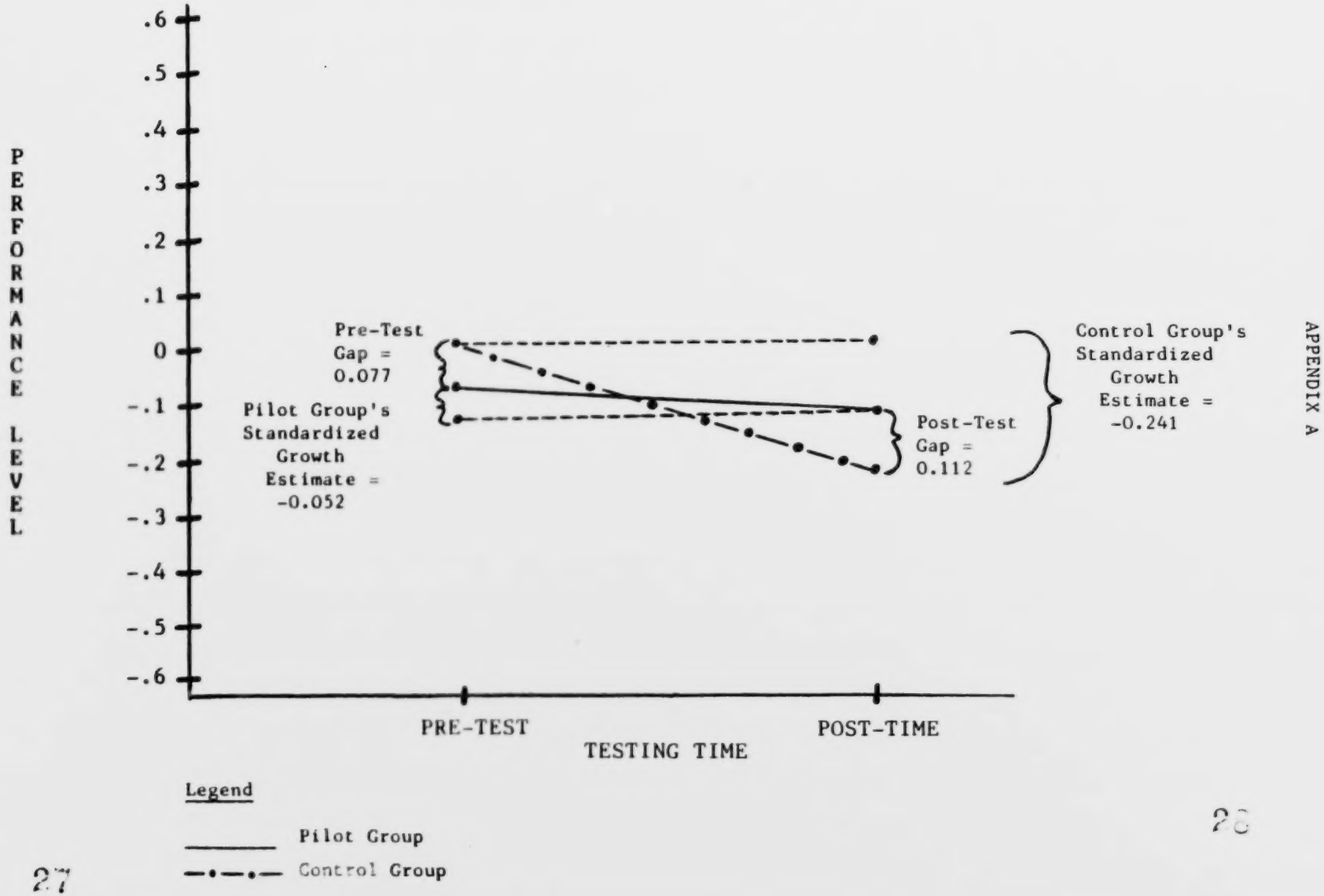
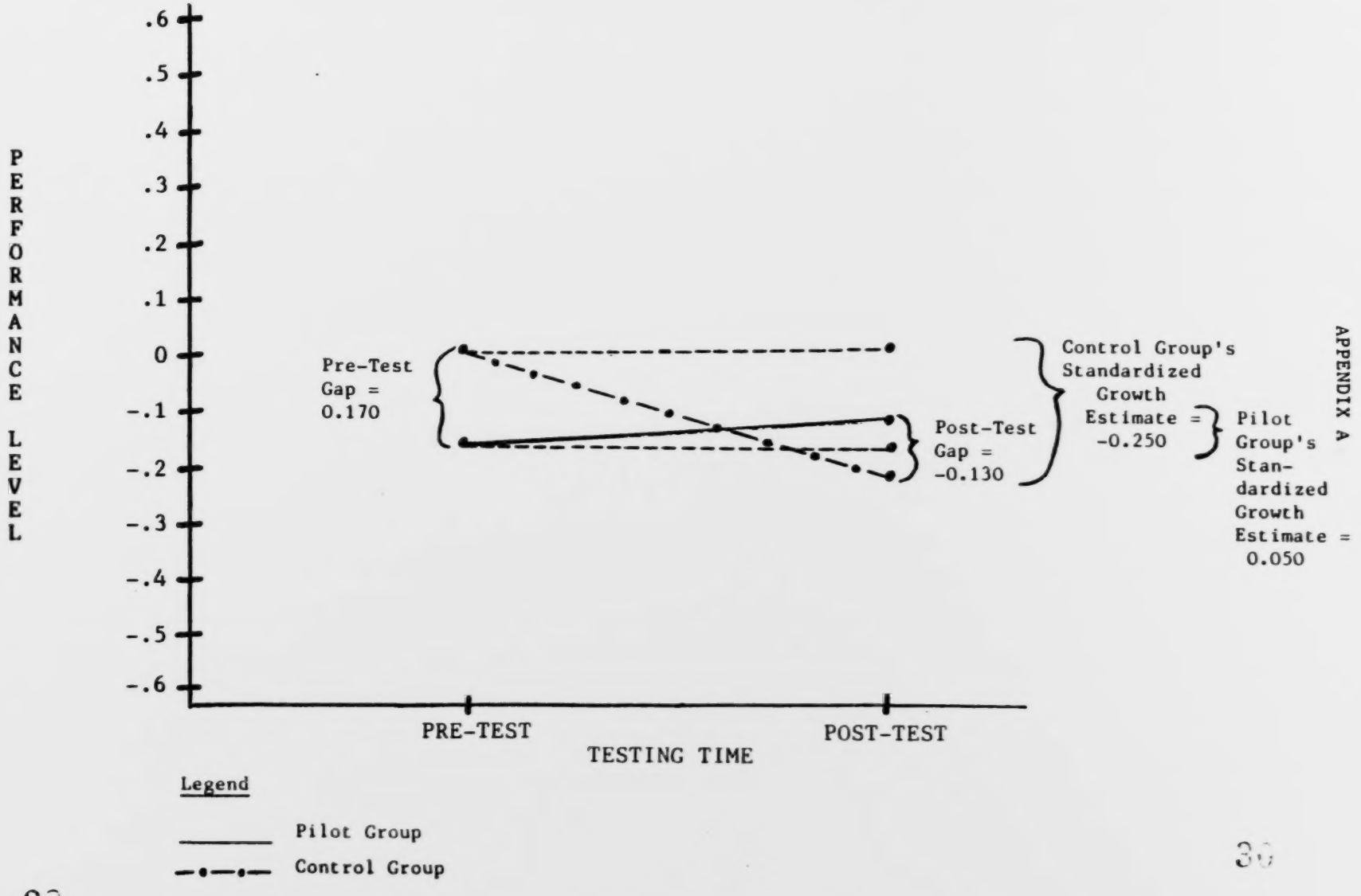


FIGURE A.4. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN LANGUAGE EXPRESSION.



APPENDIX B

STEPS TO CALCULATE THE RELATIVE GROWTH INDEX IN THE GAP REDUCTION RESEARCH DESIGN

STEP 1: (For use with a standardized achievement test.) Convert each project and comparison group student's raw pre-test and post-test scores to scale scores using the correct conversion table for the form and level of the test used. If a non-standardized test was used skip this step.

STEP 2: Compute the mean pre-test and post-test (raw or, if the test has them, scale) scores of project students at each grade level.

STEP 3: Compute the mean pre-test and post-test scores of comparison group students at each grade level.

STEP 4: Compute the pre-test and post-test standard deviations of comparison group students at each grade level.

STEP 5: Subtract the project group's mean pre-test score from the comparison group's mean pre-test score. Divide the difference by the comparison group's pre-test standard deviation and label the result the pre-test gap.

STEP 6: Subtract the project group's mean post-test score from the comparison group's mean post-test score. Divide the difference by the comparison group's post-test standard deviation and label the result the post-test gap.

STEP 7: Subtract the post-test gap (from Step 6) from the pre-test gap (from Step 5) and label the difference the gap reduction. (The gap reduction may be negative. Be sure to keep track of the sign!)

STEP 8: Subtract the comparison group's mean pre-test score from its mean post-test score and label the difference the comparison group's unstandardized growth estimate.

STEP 9: Using the <u>comparison group's</u> pre- and post-test standard deviations, calculate the following value:

$$\sqrt{\frac{(\text{S.D.}_{\text{pre}})^2 + (\text{S.D.}_{\text{post}})^2}{2}}$$

Label this value the comparison group's pooled standard deviation.

STEP 10: Divide the comparison group's unstandardized growth estimate (from Step 8) by the comparison group's pooled standard deviation (from Step 9). Label this value the comparison group's standardized growth estimate.

STEP 11: Add the gap reduction (from Step 7) to the comparison group's standardized growth estimate (from Step 10). Label this sum the project group's standardized growth estimate.

STEP 12: Divide the project group's standardized growth estimate (from Step 11) by the comparison group's standardized growth estimate (from Step 10). Multiply the result by 100 to convert it to a percent and label it the Relative Growth Index (RGI).

APPENDIX B

CALCULATION OF THE RELATIVE GROWTH INDEX (RGI) IN THE GAP REDUCTION RESEARCH DESIGN

An example may help operationalize the steps on the preceding two pages. Consider the following data set for a particular grade level.

	Project Group	Comparison Group
Pretest Mean	355.34	361.63
Pretest Std. Dev.	N/A	10.48
Posttest Mean	365.88	370.63
Posttest Std. Dev.	N/A	9.50

STEP 5: $(361.63 - 355.34) \div 10.48 = 6.29 \div 10.48 = .60$ = the pretest gap.

STEP 6: $(370.63 - 365.88) \div 9.50 = 4.75 \div 9.50 = .50$ = the posttest gap.

STEP 7: $.60 - .50 = .10$ = the gap reduction.

STEP 8: $370.63 - 361.63 = 9.00$ = the comparison group's unstandardized growth estimate.

STEP 9:

$$\sqrt{\frac{(10.48)^2 + (9.50)^2}{2}} = \sqrt{\frac{109.83 + 90.25}{2}} =$$

$\sqrt{100.04} = 10.00$ = the comparison group's pooled standard deviation.

STEP 10: $9.00 \div 10.00 = .90$ = the comparison group's standard growth estimate.

STEP 11: $.90 + .10 = 1.00$ = the project group's standardized growth estimate.

STEP 12: $(1.00 \div .90)100 = 111\%$ = the Relative Growth Index (RGI).

APPENDIX C

TABLE C.1. SUMMARY STATISTICS USED TO CALCULATE THE RELATIVE GROWTH INDICES (RGIs) BY SUBTEST AND GROUP.

Subtest	Group		Summary Statistics			
			Pre-Test		Post-Test	
	Name	N	Mean	S.D.	Mean	S.D.
Reading Vocabulary	Pilot	59	502.25	N.A.*	472.38	N.A.
	Control	≃ 20,000	521.00	79.00	529.00	79.50
Reading Comprehension	Pilot	59	462.32	N.A.	472.11	N.A.
	Control	≃ 20,000	501.00	69.70	539.00	96.30
Reading Total	Pilot	59	482.37	N.A.	472.45	N.A.
	Control	≃ 20,000	514.00	67.70	538.00	74.30
Language Expression	Pilot	59	509.06	N.A.	510.27	N.A.
	Control	≃ 20,000	545.00	83.80	569.00	84.20

*N.A. = Not Applicable.

FIGURE C.1. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING VOCABULARY.

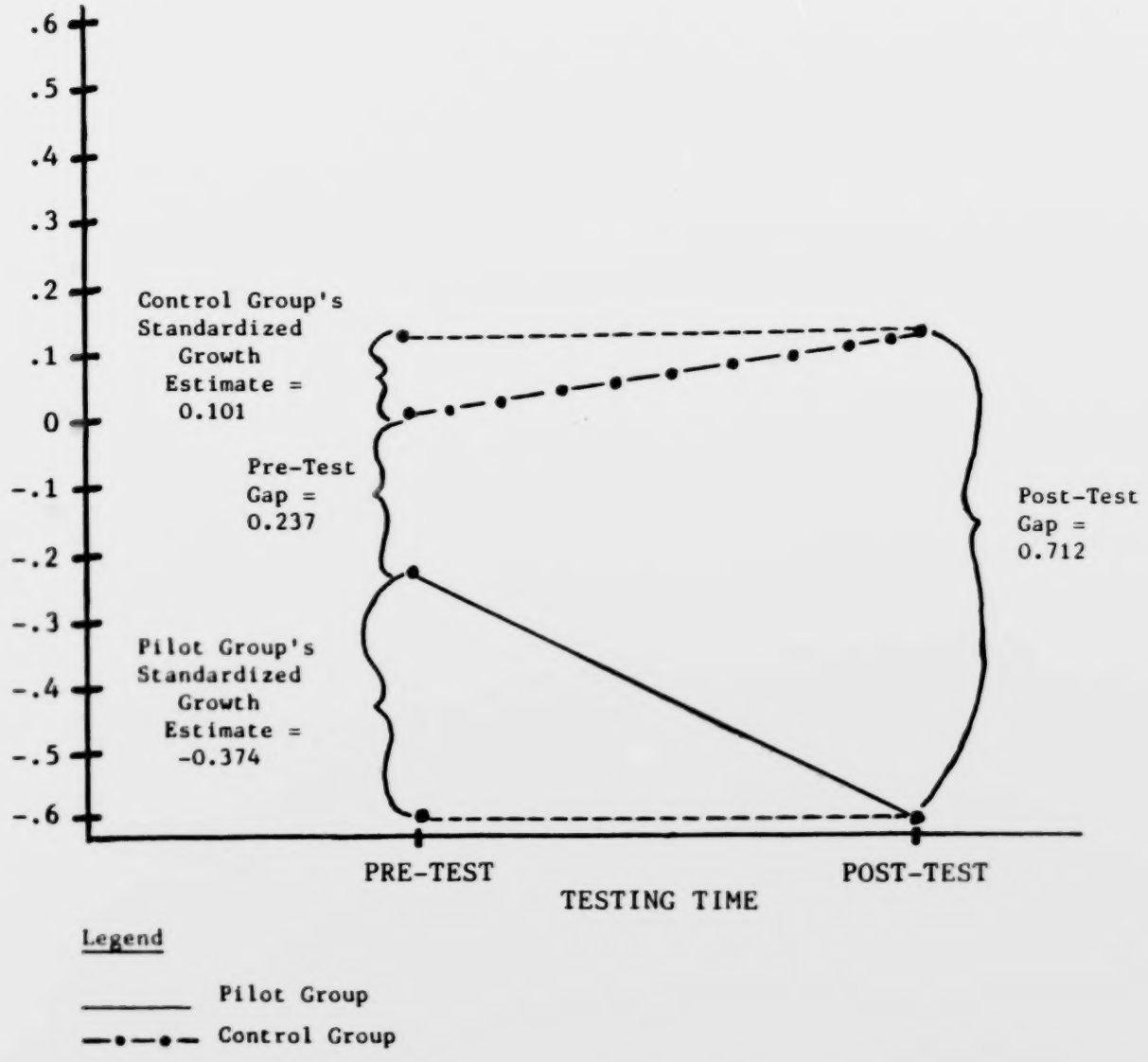
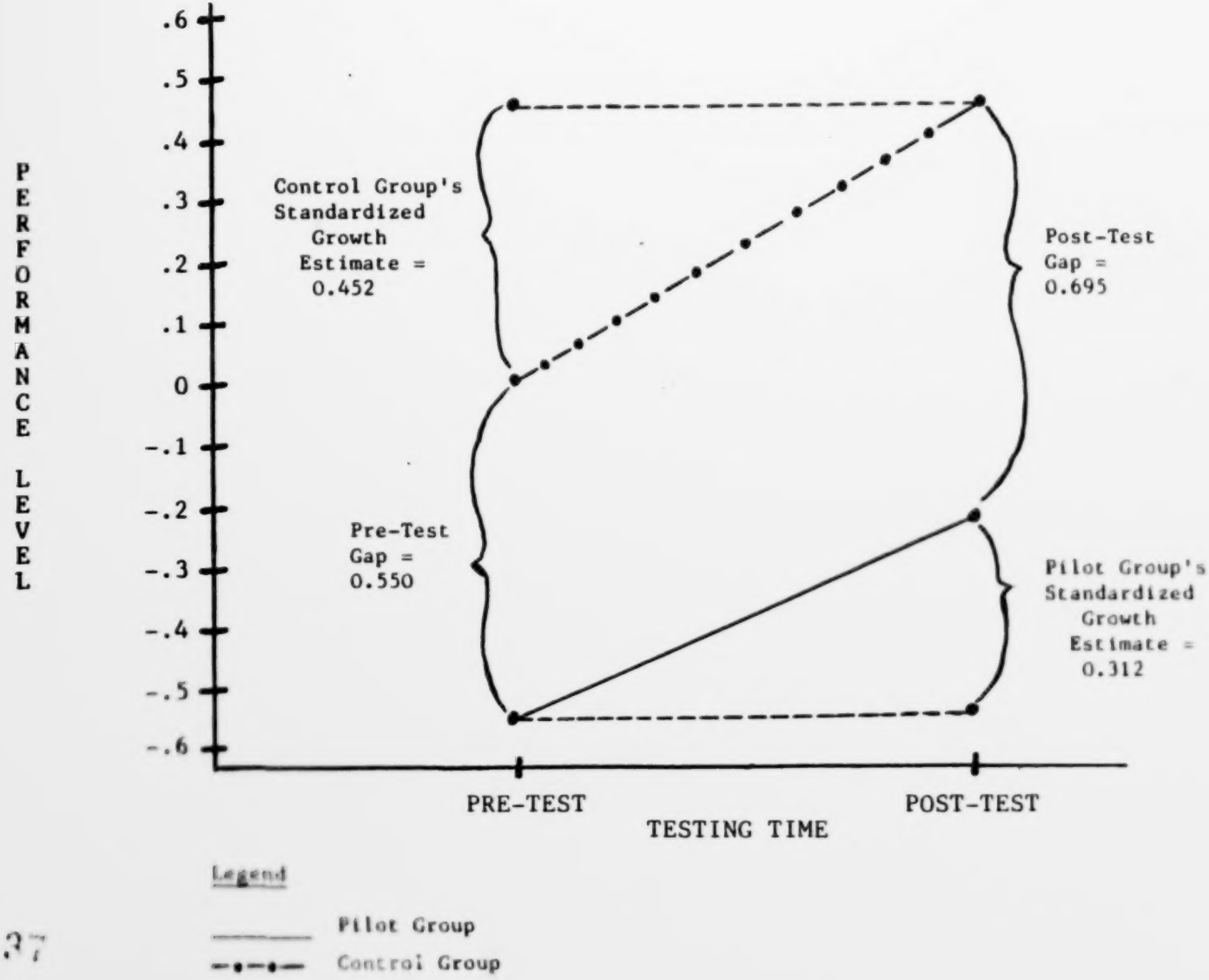


FIGURE C.2. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING COMPREHENSION.



APPENDIX C

FIGURE C.3. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN READING TOTAL.

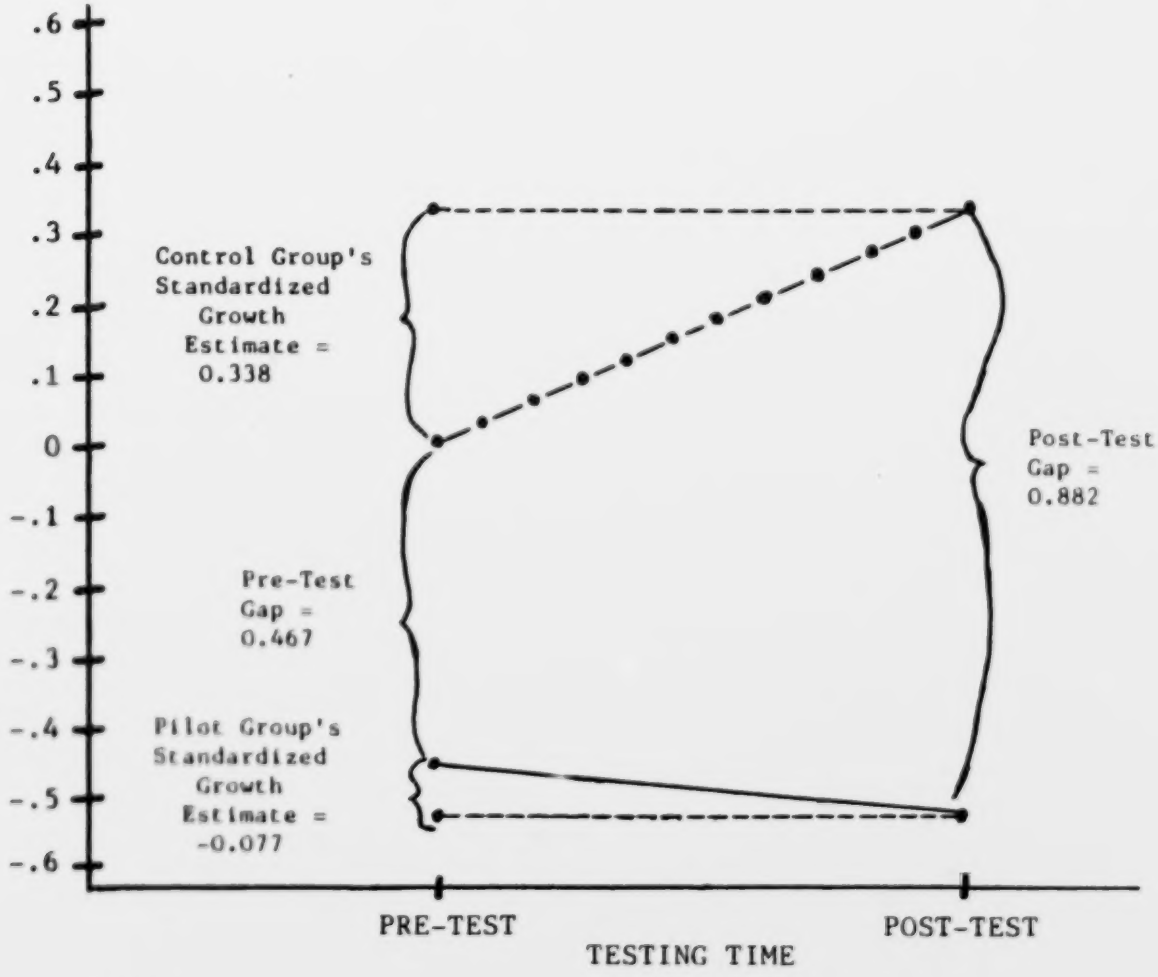
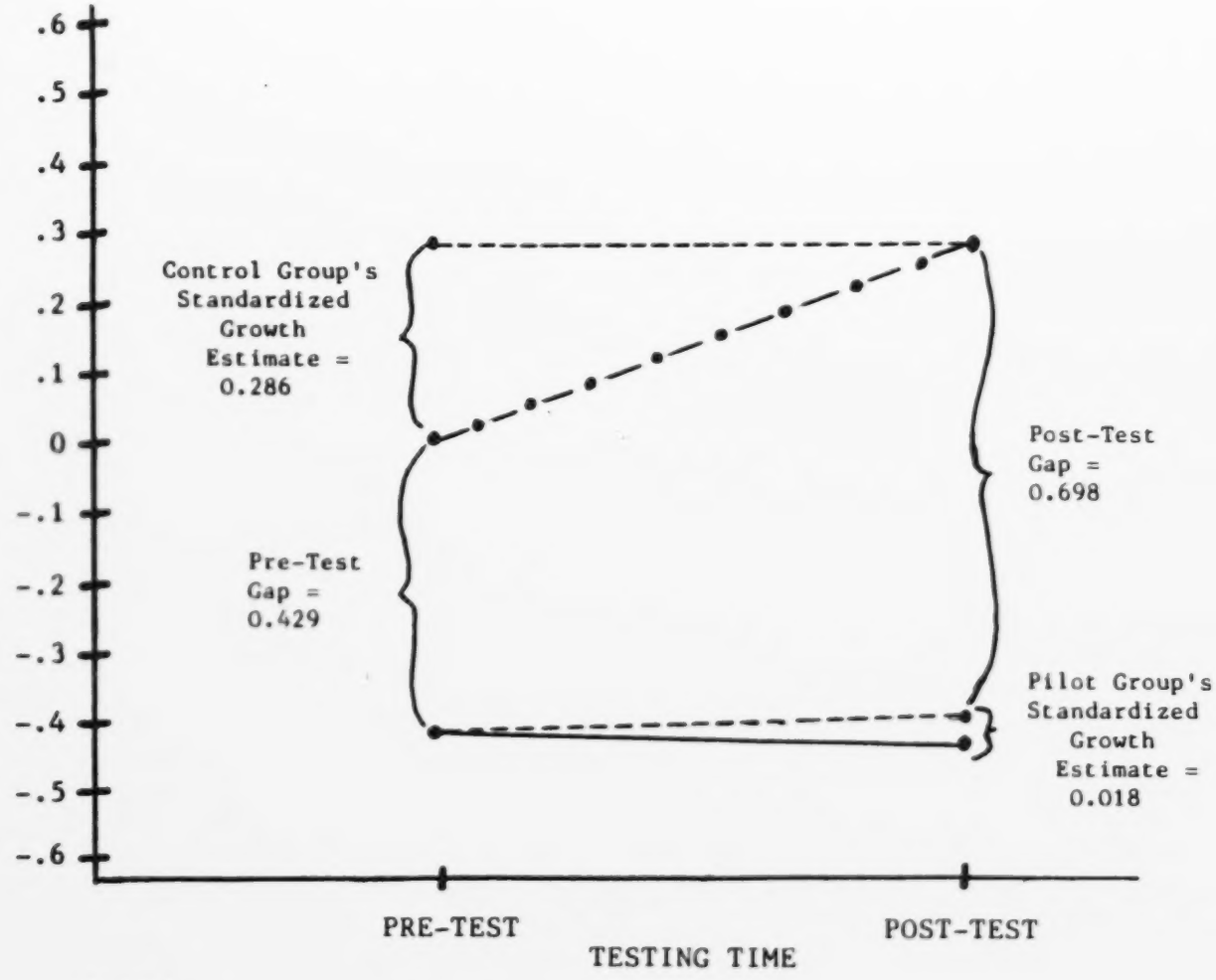


FIGURE C.4. RELATIVE GROWTH OF THE SUCCESS IN BEGINNING READING AND WRITING (SBRW) PILOT GROUP VERSUS THE HOLT BASIC READING (HBR) CONTROL GROUP FROM PRE- TO POST-TESTING IN LANGUAGE EXPRESSION.



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